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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,449	07/26/2006	Yuichiro Shindo	OGOSH57USA	1284
270. 7590. 10/27/2011 HOWSON & HOWSON LLP 501 OFFICE CENTER DRIVE SUITE 210 FORT WASHINGTON, PA 19034				
EXAMINER THAL, SUSAN				
ART UNIT		PAPER NUMBER		
1724				
NOTIFICATION DATE		DELIVERY MODE		
10/27/2011		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@howsonandhowson.com

Office Action Summary**Application No.**

10/597,449

Applicant(s)

SHINDO ET AL.

Examiner

SUSAN THAI

Art Unit

1724

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1,2,7-10,12,14 and 15 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1,2,7-10,12,14 and 15 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/CIB) Paper No(s)/Mail Date 20110912
- 4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Claim Status

1. The amendment filed 09/12/11 is acknowledged; claims 1, 2, 7-10, 12, 14 and 15 are pending.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 13 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Table 1 of the instant specification merely states "8 to 9N Copper" which is not the same as inclusively having 9N Copper, thus newly added claim 13 does not have sufficient support in the instant specification for the 9N copper limitation.
3. Claims 1, 2, 7-10, 12, 14 and 15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Regarding the claims:

- a. Regarding the breadth and nature of the claims, the claims are all directed to Ultrahigh purity copper and a method of making the copper. The claims are broad since they are directed to multiple purities of copper without further clarification on how the 8N or 9N purity was obtained (i.e. specific required individual element content for each purity).
- b. Regarding the state of prior art, Fujiwara et al. ("Ductility of Ultra High Purity Copper") shows that it was known at the time of the invention to have 8N purity Copper.
- c. Regarding the level of one of ordinary skill, one would require a high level of education in the chemical/engineering fields in order to apply and understand the claimed invention.
- d. Regarding the level of predictability in the art, predictability is high in regards to the techniques in claim 7 since all of the individual techniques have been developed.
- e. In regards to the amount of direction provided by the inventor, the applicant provides general details on materials and the process used but provides little and ambiguous details on how 8N and 9N copper purity was determined overall. For example, 8N purity (claim 1), there is a lack of descriptive explanation on how the 8N was determined and what specific trace elements and amounts thereof constitute the 8N since Table 1 merely provides general ranges. Furthermore, the applicant argued that the 8N of Fujiwara is not accurate since the sample was actually 7N5 based on the chemical analysis of

Fujiwara's 8N sample in Table 1. Based on the same reasoning, the applicant indicates that 8N is defined by the entire chemical analysis, thus Table 1 of the instant specification when considered as a whole also indicates that the applicant does not have the claimed 8N since the total amount of chemicals added would not meet the 99.999999% requirement. Thus, it is unclear how the applicant arrived at 8N or 9N purity given the chemical analysis of Table 1 of the instant specification.

f. In regards to working examples, there are none that would allow one of ordinary skill to make and use the claimed invention to obtain the specific required purity since the specific content of individual elements was not provided.

g. The quantity of experimentation needed to both make and use the invention based on the content of the disclosure is high since the lack of working examples, explanations and details would not allow one of ordinary skill to make and use the claimed invention. The statement of the claim limitation in and of itself does not enable one skilled in the art to make and use the claim. For example, claim 1 recites the purity of copper being 8N or higher, it is unclear how the 8N purity is obtained and what applicant defines as 8N based on concentration of elements since the total impurities from Table 1 is below the detection limit.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1-2, 7-10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara et al. ("Ductility of Ultra High Purity Copper").

Regarding **claims 1-2, 7-8 and 12**, Fujiwara discloses 8N ultra-high purity copper (abstract) where the elements O, C, N, H, S and P are 1ppm or less (see Table 1). In regards to the residual resistance ratio (RRR), applicant admitted that the RRR of 8N copper is 40,000-100,000 (table 1). RRR is a property of purity, therefore conventional 8N copper would have the claimed RRR.

Although Fujiwara does not explicitly disclose that the content of impurities excluding the gas components totals no more than 0.01ppm, it is well known in the art that high purification of target materials are in demand as evidenced by the instant specification (see background art, para 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time to reduce the amount of impurities present in the target sample because it provides a higher purified target material. It is well settled that the difference in degree of purity itself does not predicate invention. In re Merz, 38 USPQ 143 and In re King et al, 43 USPQ 400.

The Supreme Court decided that a claim can be proved obvious merely by showing that the combination of known elements was obvious to try. In this regard, the Supreme Court explained that, "[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill in the art has a good reason to pursue the known options within his or her technical grasp." An obviousness determination is not the result of a rigid formula disassociated from the consideration of the facts of the case. Indeed, the

common sense of those skilled in the art demonstrates why some combinations would have been obvious where others would not. Therefore, choosing from a finite number of identified, predictable solutions, with a reasonable expectation for success, is likely to be obvious to a person of ordinary skill in the art. See *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1395 – 97 (2007) (see MPEP § 2143, E.).

Claim 7 is considered a product-by-process claim. The cited prior art teaches all of the positively recited structure of the claimed apparatus or product. The determination of patentability is based upon the product itself. The patentability of a product or apparatus does not depend on its method of production or formation. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. See *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (see MPEP § 2113).

Regarding **claims 9 and 10**, Fujiwara discloses all the limitations as set forth above.

Fujiwara, however, does not explicitly disclose that the content of Ag is less than 0.005ppm, Al is less than 0.001ppm and Fe is less than 0.001ppm.

It is well known in the art that high purification of target materials are in demand as evidenced by the instant specification (see background art, para 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time to reduce the amount of impurities present in the target sample because it provides a higher purified

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6. Claims 1-2, 7-11 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara et al. ("Ductility of Ultra High Purity Copper") in view of Itoh et al. (US5206430).

Regarding **claims 1-2, 7-10 and 14**, Fujiwara discloses 8N ultra-high purity copper (abstract) where the elements O, C, N, H, S and P are 1ppm or less (see Table 1). In regards to the residual resistance ratio (RRR), applicant admitted that the RRR of 8N-9N copper is 40,000-100,000 (table 1). RRR is a property of purity, therefore conventional 8N copper would have the claimed RRR.

Fujiwara does not explicitly disclose that the content of impurities excluding the gas components totals no more than 0.01ppm or where the content of Ag is less than 0.005ppm, Al is less than 0.001ppm, Fe is less than 0.001ppm or where S is less than 0.005 ppm.

Itoh discloses a method for obtaining high purity products (abstract) where active carbon is used as a purifying means (abstract).

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the method of purification of Fujiwara by including the active carbon purifying means of Itoh because the added active carbon adsorbs and removes dissolved metal catalysts (C3/L54-65).

Itoh further teaches that the amount of active carbon used depends on the amount of catalytic component in the crude mixture (C3/L54-65) thus affecting the amount of catalyst metal remaining after purification. Therefore, the amount of catalyst metals remaining is a variable with respect to the amount of active carbon used and purity of the desired product.

"[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." See *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). The discovery of an optimum value of a known result effective variable, without producing any new or unexpected results, is within the ambit of a person of ordinary skill in the art. See *In re Boesch*, 205 USPQ 215 (CCPA 1980) (see MPEP § 2144.05, II.).

Furthermore, it is well known in the art that high purification of target materials are in demand as evidenced by the instant specification (see background art, para 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time to reduce the amount of impurities present in the target sample because it provides a higher purified target material. It is well settled that the difference in degree of purity itself does not predicate invention. In re Merz, 38 USPQ 143 and In re King et al, 43 USPQ 400.

The Supreme Court decided that a claim can be proved obvious merely by showing that the combination of known elements was obvious to try. In this regard, the Supreme Court explained that, "[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill in the art has a good reason to pursue the known options within his or her technical grasp." An obviousness determination is not the result of a rigid formula disassociated from the consideration of the facts of the case. Indeed, the common sense of those skilled in the art demonstrates why some combinations would have been obvious where others would not. Therefore, choosing from a finite number of identified, predictable solutions, with a reasonable expectation for success, is likely to be obvious to a person of ordinary skill in the art. See *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1395 – 97 (2007) (see MPEP § 2143, E.).

Claim 7 is considered a product-by-process claim. The cited prior art teaches all of the positively recited structure of the claimed apparatus or product. The determination of patentability is based upon the product itself. The patentability of a product or

apparatus does not depend on its method of production or formation. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. See *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (see MPEP § 2113).

Regarding **claim 15**, modified Fujiwara discloses all the limitations as set forth above in regards to the copper sputtering target having superior deposition characteristics, regarding composition claims, if the composition is the same, it must have the same properties (see MPEP § 2112.01, II.).

Response to Arguments

7. Applicant's arguments filed 09/12/11 have been fully considered but they are not persuasive.
8. Regarding the submitted translation of the Foreign Priority document, the previous rejection under 102(e) over Okabe et al. is withdrawn.
9. Regarding the applicant's argument that one of ordinary skill in the art understands the limitation requiring a copper material of 8N purity and no further explanation is required for the purposes of enabling this limitation is incorrect. The instant specification provides what seems to be limits/what would be expected of each element contained in 8N. Thus, in one instance, applicant's '8N' may include the maximum of the limits/expected amounts for each element thus exceeding the required weight % argued by applicant. Therefore, absent the specific concentration of each

element present in applicant's calculation of 8N, one of ordinary skill in the art would not be able to apply what applicant considers 8N.

10. In regards to table 1 of the present invention and table 1 of Fujiwara both disclose the elements found in 8N. Under careful examination of Fujiwara, Fujiwara discloses mass ppm which is different from the wt% ppm presented in applicant's instant specification. Thus, adding all of the elements the total amount of Fujiwara would be 0.0000088% meeting the 0.01 ppm limitation.

11. In regards to applicant's argument that other attributes may affect the RRR but the specific attributes that provides the 40,000-100,000RRR is not claimed. What is presented is the purity itself, which the examiner has provided.

12. Regarding applicant's arguments that Itoh fails to teach that purity can be controlled to a desired level by changing the additive amount of the activated carbon, the examiner respectfully disagrees. As indicated in the previous action, Itoh clearly discloses that the amount of activated carbon required for purification depends on the residual amount of the catalytic component to be absorbed (c3/L54-65). One of ordinary skill in the metal purification art would look towards references that use various means to remove unwanted components as a way to purify a metal. The examiner did not rely on the specific catalytic component of Itoh but rather the idea of using activated carbon for purification and the idea that the amount of activated carbon would affect the purity of the target metal.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SUSAN THAI whose telephone number is (571)270-1487. The examiner can normally be reached on Monday-Thursday, 6:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, KEITH D. HENDRICKS can be reached on (571)272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KAJ K OLSEN/
Primary Examiner, Art Unit 1724

/SUSAN THAI/
Examiner, Art Unit 1724